

### REMARKS

Reconsideration is respectfully requested in light of the foregoing Amendment and remarks that follow.

Claims 3-9 are before the Examiner.

Claims 1 and 2 have been canceled. Claims 3, 8 and 9 have been amended to address the objections raised by the Examiner on page 2 of the Official Action. The "c" has been capitalized. The "-", appearing before "ethyl" now appears after "methyl" as requested. Claims 4 and 5 have been amended to reflect a change in dependency due to the cancellation of claim 1 and 2.

Claim 3, 8 and 9 are rejected under 35 U.S.C. 112 second paragraph as failing to particularly point out and distinctly claim the subject matter. Applicants respectfully traverse.

The claims have been amended to address the points raised in the Office Action.

As to claim 3, subsections d) and e), there is a clear indication that R' is an alkyl group e.g. cycloalkyl- and chain including linear and branched. The Examiner's concern regarding repetition of " R' " has been addressed by deletion of its second occurrence. In subsection l) of claim 3, it should be noted that "D3", "D4" and "D5" are recognized types of cyclic siloxanes. See U.S. Patent No. 4,022,152 (Col. 6, lines 1-6; D3, D4). Further, the intended meaning for D3, D4 and D5 is set forth on page 7 of the specification. D3 denotes 3 units of the type  $\text{-O-Si(CH}_3)_2$ , D4 denotes 4 units of the type  $\text{-O-Si(CH}_3)_2$  and D5 denotes 5 units of  $\text{-O-Si(CH}_3)_2$ . It is not clear if the Examiner desires this definition incorporated in the claim since it does appear in the specification or desires structures to be inserted for D3 and D5, which correspond to the respective definition.

With regard to the range for "x" in  $S_x$ , identified in f), g), h), i) and j) of claim 3, claim 3 has been amended to include a definition for the range as being "one or more". Support for this is the formula appearing in the original claim and in the specification. The formula suggests the desired valence for "S" as well as its presence in integral amounts as repeats, i.e. one or more.

In light of the amendments to the claims, withdrawal of the rejection is respectfully requested.

Claims 1-4 and 6-9 are rejected under 35 U.S.C. 103(a) as unpatentable over Deller et al (U.S. Patent No. 5,776,240) in view of Mangold et al. (CA 2,223,377). Applicants respectfully traverse.

Deller et al teach that prior to their invention the spray dried granules of pyrogenically prepared silicon dioxides were not optimal for use as catalytic supports. Deller et al suggest that the inclusion of a heating step (150-1100 degrees C for 1-8 hrs) or a silanizing step following the spray drying step (silicon dioxide dispersion in water) addresses that problem. The formed granules process high purity, high thermal stability, a low silanol group content, primary particles microspherical in shape and less than 5% of the total pore volume exists of pores with a diameter less than 5 nm. (See col. 6 at lines 19-27. Further characteristics of the granules are set forth in col. 7 at lines 30-55.

The benefits of the treatment steps in terms of catalyst produced and polymer yields are illustrated in the first complete table shown in col.13 (spray dried only supports; spray dried and chemically treated supports; spray dried, heat- and chemically treated supports). Particle characteristics of the examples are set forth in the tables bridging col. 10-13.

It is stated in Deller et al. that the desired particle size for the supports is less than 5 nm. Deller et al do not suggest increasing particle size as desirable.

Deller et al. specify only specific step sequences and condition as resulting in the desired properties. Deller et al offer no guidance as to the impact of including other chemical or mechanical treatments in their process on achieving the disclosed benefits.

Mangold et al. teach doping of pyrogenically-prepared oxides using aerosols . Mangold et al. teach that the use of aerosols avoid the prior art problems of a non-homogeneous distribution of the doping substance in the primary particle and the presence of inhomogeneities. Mangold et al teach that larger cohesive structures are produce with doping (cerium). Mangold et al. do not speculate as to the impact of the inclusion of other chemical or mechanical treatment steps on achieving the taught benefits.

The Examiner indicates that there is permissible hindsight and impermissible hindsight. The Examiner further indicates that there is no reliance on teachings present only in Applicants' specification.

There is a certain degree of unpredictability in the chemical arts. The claimed invention requires the combination of aerosol doping and also silanization. It is not clear from the references if these distinct treatments are compatible. Further, if they are, what step sequence needs to be followed for them to be compatible. Further, it is not clear from these references if the taught benefits by either Deller et al. or Mangold et al would be impacted by the presence of other material steps to either of their processes.

The teaching present in Applicants' specification apparently relied upon by the Examiner is that the doping and silanization surface treatment step can be combined and significant benefits achieve by their combination.

Further, Mangold et al. teach that larger cohesive structures are produced by doping. It is not clear from Deller et al. that larger particle sizes are desired. Deller et al. clearly teach the desirability of particle sizes less than 5 nm. Accordingly, it is not clear why one would have modified Deller et al to include a doping step to increase particle size or to form aggregates.

It is respectfully submitted that the Examiner has not establish a proper prima facie case of obviousness. The references do not suggest their combination. Further the Examiner apparently relies on teachings present only in Applicants' specification to suggest the combination of the references and a reasonable likelihood for success for the combination. Withdrawal of the rejection is respectfully requested.

Claims 1-3, 5, 8, and 9 are rejected under 35 U.S.C. 103(a) as unpatentable over Laufer et al. (U.S. Patent No. 4, 022,152) in view of Mangold et al. (CA 2,223,377). Applicants respectfully traverse.

Laufer et al. teach a continuous process for the preparation of hydrophobic highly dispersible oxides, mixed oxides or oxide mixtures of metals or metalloids. These oxides or oxide mixtures are disclosed as obtained by either pyrogenic reactions or wet precipitation. The Laufer et al. process treats the oxide particles with vaporizable organosilicon compounds in the gas phase to form superior hydrophobic products entirely free of water, halogens and hydrogen halide. "Absolute drying" of the oxide particles is taught to enhance surface quality which results in the formation of superior adsorptive bonds with the organosilicon compound and to promote an optimal covering of the surface. The resultant highly active aerogel is outstandingly sensitive to reactive materials and is eminently suitable for reaction with an agent which imparts hydrophobic properties. The drying step permits both the drying process and the hydrophobic character imparting reaction to take place in a single apparatus which permits continuous operation.

Laufer et al. teach specified starting materials and a specified treatment steps. Laufer et al. do not suggest the inclusion of other steps within the steps of their process, e.g. doping. As

noted above, the chemical arts are deemed to have a degree of unpredictability associated with them.

Mangold et al. is discussed above.

There is no suggestion apparent from Laufer et al. to select doped pyrogenically produced metal oxides as a starting material. There is no suggestion within either Mangold et al. or Laufer et al. that an aerosol doping step can be combined with a continuous surface modification process. Further, the claimed step order is not suggested by either Mangold et al. or Laufer et al. (The process claimed in claim 4 requires aerosol doped particles to be treated with surface modification step. The process claimed in claim 6 requires a water/ acid treatment step prior to treatment with the surface modification step.) It is not clear from the action why one would modify the continuous Laufer et al. process to include the aqueous/aqueous acid treatment step of the claims. Such a step is not consistent with absolute dry conditions.

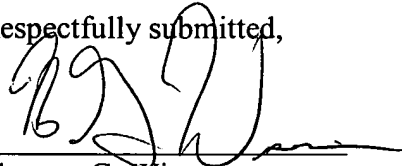
One must engage in various selection processes to modify the Laufer et al. process to arrive at the one claimed which results in the claimed products. Mangold et al. does not provide the guidance to make these necessary selections. It appears that such guidance would only come from Applicants' specification. The assurances of success would also only come from the instant specification.

It is respectfully submitted that a proper prima facie case is not established based on the teaching of Laufer et al. and Mangold et al., taken alone or in combination. It appears that the Examiner is employing the teachings present only in Applicants' specification to arrive at the invention claimed. Withdrawal of the rejection is respectfully requested.

In view of the foregoing amendments and remarks, the application is believed to be in condition for allowance and a notice to that effect is respectfully requested.

Should the Examiner not find the Application to be in allowable condition or believe that a conference would be of value in expediting the prosecution of the Application, Applicants request that the Examiner telephone undersigned Counsel to discuss the case and afford Applicants an opportunity to submit any Supplemental Amendment that might advance prosecution and place the Application in allowable condition.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'T. G. Wiseman', written over a horizontal line.

Thomas G. Wiseman  
(Registration No. 35,046)

VENABLE  
Post Office Box 34385  
Washington, DC 20043-9998  
Telephone: (202)344-4800  
Direct dial: 202-344-4614  
Telefax : (202) 344-8300

DC2-DOCS1-521658